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G. C. TIBBETTS

2,877,363

TRANSDUCER LEADS

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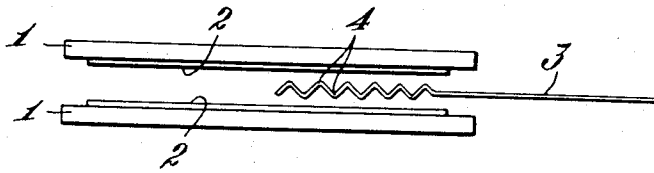


Fig. 1

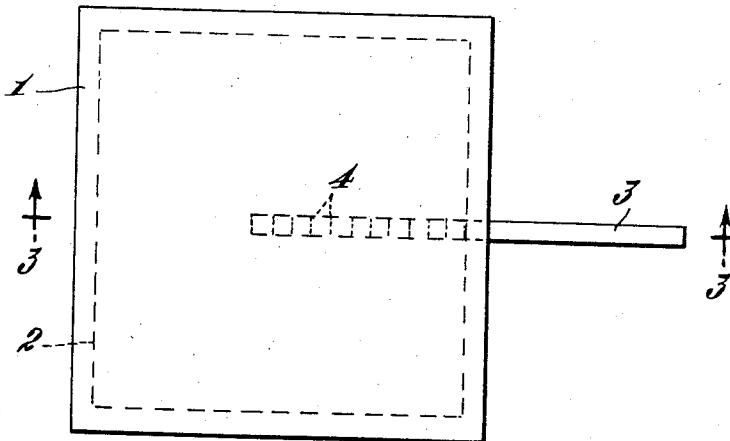


Fig. 2

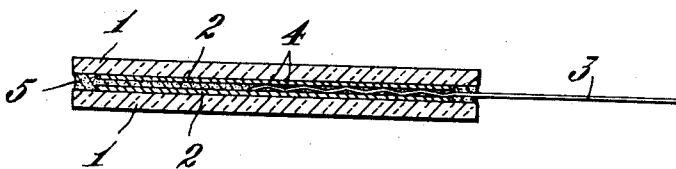


Fig. 3

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Application October 29, 1954, Serial No. 465,679

2 Claims. (Cl. 310-9.7)

This invention relates to transducers of the type comprising an electrostrictive, piezoelectric or other slab which changes dimensions between two points in response to electrical forces, for use in converting electrical energy into mechanical vibrations or vice versa. In order to conduct current to and from the slabs it is customary to fasten sheets of conducting material over the sides of the slab with parts of the sheets extending beyond the edges of the slab for connection to an exterior circuit. Usually the slabs are coated with a thin layer of conducting material, such as gold foil or graphite, before the conducting sheets are applied. In order to get good conductivity between the slab and sheets it is necessary to press them firmly together. It has also been proposed to strike up parts of the sheet to form edges which are embedded in the slab when the parts are pressed together. However, owing to the fragile structure of these slabs it has not been possible to obtain good conductivity between the sheets and the slab without damaging the slab.

Objects of the present invention are to provide a device of the character referred to in which good electrical contact between the conducting sheets and slab can be secured without damage to the slab, which is simple and economical in construction and which is durable and reliable in use.

According to the present invention the sheet of conducting material which conducts current to and from the slab is bent into a series of ridges and valleys extending parallel to the slab so that the summits of the ridges are held against the slab when the parts are pressed together, thereby obtaining good conducting contact between the sheet and slab without danger of injuring the slab. The sheet is preferably in the form of an elongate strip of metal foil having the ridges and valleys extending crosswise of the strip. While the strip may be made of any yielding conducting material, it is preferably made of silver about one mil thick. Thus when the parts are pressed together the ridges and valleys flatten out more or less.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawings in which

Fig. 1 is a view of the parts in spaced relationship;

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Fig. 2 is a plan view of the assembled parts; and Fig. 3 is a section on line 3-3 of Fig. 2.

The particular embodiment of the invention chosen for the purpose of illustration comprises two piezoelectric slabs 1 coated on their opposing faces with gold foil or other conducting material and the conducting strip 3 having a series of ridges and valleys 4. As shown in Fig. 3 the two slabs are held together by cement 5 and in laminating the parts together the corrugated strip is flattened by pressing the parts together, thereby pressing the summits of the ridges into good contact with the slabs without danger of injury to the slabs. Current may be conducted to and from the other faces of the slabs in any suitable manner and the slabs may be connected to any suitable vibrating member as disclosed for example in my co-pending application Serial No. 465,597 filed on even date herewith.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim.

1. A piezoelectric transducer comprising a crystal slab which changes dimensions between two points along a vibrating face in response to electrical forces, a sheet of yielding conducting material along said vibrating face, and means for holding the sheet against the said face, characterized in that the sheet has a series of ridges and valleys, said series extending parallel to said vibrating face with smooth, rounded arched portions held in partially flattened, yielding contact with said vibrating face so as to permit lengthwise flexing of the sheet with the slab without injury to said face.

2. A piezoelectric transducer comprising a pair of crystal slabs which change dimensions between two points along vibrating faces in response to electrical forces, a sheet of yielding conducting material along said vibrating faces, cementitious material joining said slabs to hold the sheet against said faces, characterized in that the sheet is embedded in said cementitious material and has a series of ridges and valleys, said series extending parallel to said vibrating face with smooth, rounded arched portions held in partially flattened, yielding contact with said vibrating faces so as to permit lengthwise flexing of the sheet with the slabs without injury to said faces.

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